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CORRIGENDUM: Integrative taxonomy resolves three new cryptic species of small southern African horseshoe bats (*Rhinolophus*)

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This corrigendum advises that the cytochrome *b* sequence, GenBank accession number MG980682, of *Rhinolophus landeri* Martin, 1837 from Liberia (accession number DM12593 in the Durban Natural Science Museum), reported by Taylor *et al.* (2018) is contaminated and represents a sequence of *Bos taurus* Linnaeus, 1758 rather than the horseshoe bat *R. landeri*. In this corrigendum, we re-analysed the molecular data from Taylor *et al.* (2018), replacing the contaminated sequence with a sequence of *R. landeri* from Mali in West Africa (GenBank accession number KU531353), which truly represents *R. landeri* (see Dool *et al.*, 2016).

The revised data do not change the original taxonomic conclusions of Taylor *et al.* (2018). They show that *R. landeri s.s.* is the sister species (although not strongly supported by maximum likelihood or parsimony bootstrap values and moderately supported by Bayesian probability) of newly described *Rhinolophus lobatus* from southern Africa (Fig. 1, corresponding to the corrected version of Fig. 2 of Taylor *et al.*, 2018). A similar close relationship was also shown by Dool *et al.* (2016), who compared western and southern African populations of *R. landeri s.l.* (*R. landeri* and *R. lobatus* Peters, 1852, respectively, in our interpretation).

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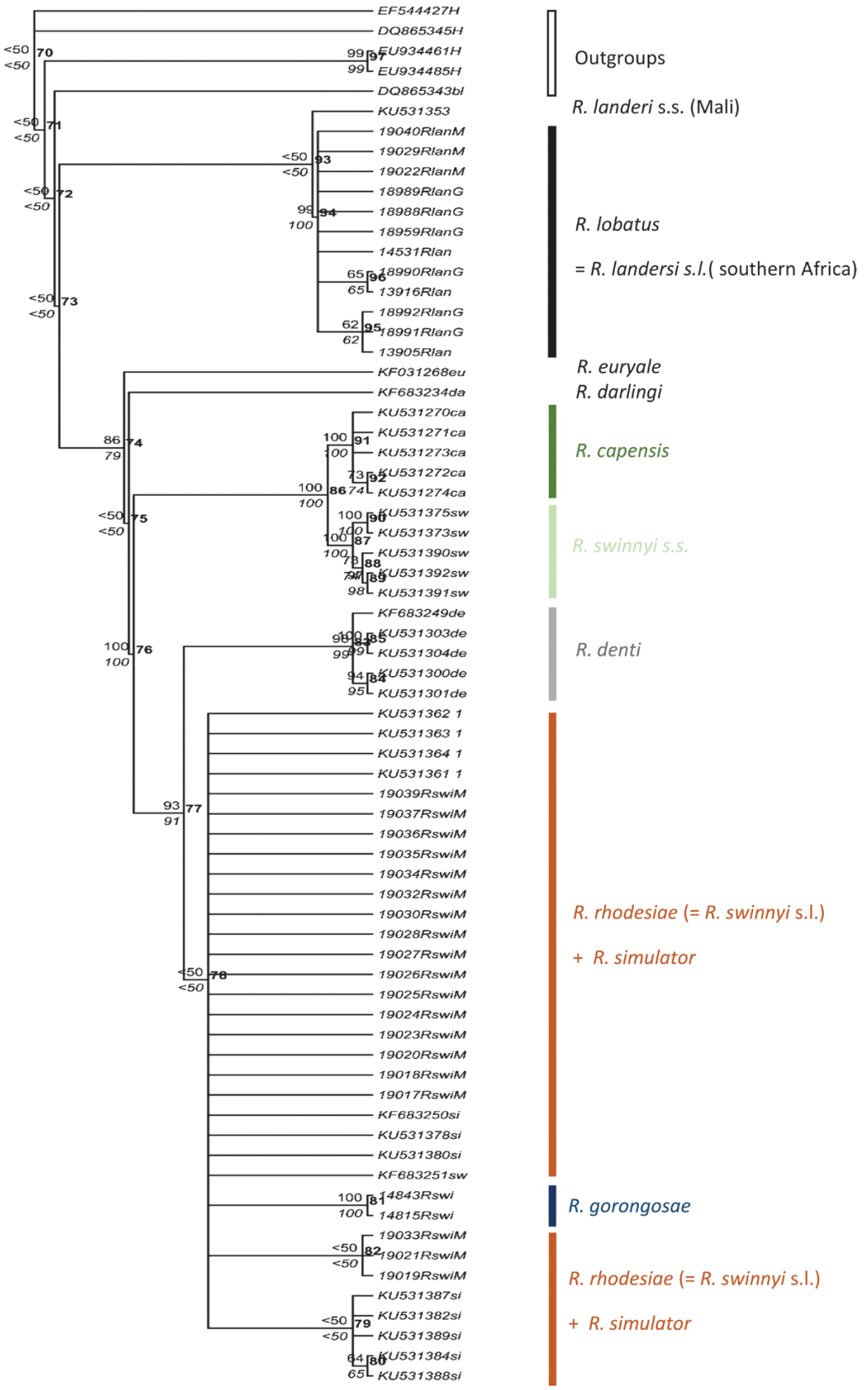

Figure 1. Bayesian tree of partial *Cytb* sequences, with nodal support values based on Bayesian probabilities (in bold to the right of nodes) and bootstrap values for maximum likelihood (left of node and above branch) and maximum parsimony (left of node and below branch).

Table 1. Mean uncorrected *p*-distances (below) diagonal and Kimura 2-parameter model-corrected distances (above diagonal) based on 667 cytochrome *b* (*Cytb*) sequences between eight recognized and newly proposed species of small African *Rhinolophus* bats

Rhinolophus	*rhodesiae*	*simulator*	*denti*	*swinnyi*	*capensis*	*lobatus*	*gorongosae*	*landeri*
rhodesiae	**0.0024**	0.003	0.050	0.092	0.088	0.156	0.075	0.151
simulator	0.003	**0.0012**	0.049	0.093	0.087	0.156	0.072	0.148
denti	0.048	0.047	**0.0071**	0.072	0.068	0.138	0.107	0.130
swinnyi	0.085	0.085	0.067	**0.0110**	0.060	0.143	0.145	0.147
capensis	0.081	0.080	0.064	0.057	**0.0056**	0.149	0.135	0.148
lobatus	0.137	0.137	0.124	0.128	0.132	**0.0028**	0.194	0.055
gorongosae	0.071	0.069	0.099	0.130	0.123	0.168	**0.0179**	0.176
landeri	0.133	0.131	0.117	0.131	0.131	0.052	0.155	–

Within-species uncorrected *p*-distances are provided in bold face on the diagonals, except for *R. landeri* where only one individual was available.

The two sister species show a *p*-divergence of 5.3%, similar to that found between other species pairs of well-recognized species, e.g. *Rhinolophus capensis* Lichtenstein, 1823 and *Rhinolophus swinnyi* Gough, 1908 (p = 5.7%) and *Rhinolophus denti* Thomas, 1904 and *Rhinolophus rhodesiae* Roberts, 1946 (p = 4.8%) (Table 1, corresponding to corrected version of Table 1 of Taylor *et al.*, 2018). Together with morphological differences described in the original paper, this divergence supports the recognition of *R. lobatus* as a species distinct from *R. landeri*.

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REFERENCES

Dool SE, **Puechmaille SJ**, **Foley NM**, **Allegrini B**, **Bastian A**, **Mutumi GL**, **Maluleke TG**, **Odendaal LJ**, **Teeling EC**, **Jacobs DS. 2016.** Nuclear introns outperform mitochondrial DNA in inter-specific phylogenetic reconstruction: lessons from horseshoe bats (Rhinolophidae: Chiroptera). *Molecular Phylogenetics and Evolution* **97:** 196–212.

Taylor PJ, **Macdonald A**, **Goodman SM**, **Kearney T**, **Cotterill FP**, **Stoffberg S**, **Monadjem A**, **Schoeman MC**, **Guyton J**, **Naskrecki P**, **Richards LR. 2018.** Integrative taxonomy resolves three new cryptic species of small southern African horseshoe bats (*Rhinolophus*). *Zoological Journal of the Linnean Society* **184:** 1249–1276.